STEAM LOCOMOTIVE 6060:
AN OPPORTUNITY ANALYSIS
AND FEASIBILITY ASSESSMENT

Prepared for

Alberta Tourism
and
Alberta Economic Development and Trade

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EXECUTIVE SUMMARY

- This study was commissioned by the Alberta departments of Tourism and Economic Development and Trade to assess the opportunities for the use of Engine 6060, a large steam locomotive which has been restored to operating condition by the Government of Alberta.

- Preliminary analyses conducted by the study team suggested that the use of the engine as part of a charter program of short or long-haul tourist excursions represented the most attractive opportunity in terms of tourism development, engine utilization, operational potential, and financial viability. The remainder of the study program focused on this particular commercial option.

- The feasibility evaluation of the potential steam charter service has concluded that:

  i) There is a market for the service, but target users will be attracted as much by the scenery offered, the en route services, amenities, and attractions, and the general excursion experience, as by the steam engine itself.

  ii) A proposed charter service faces considerable uncertainties regarding the rail lines it will be able to operate on and the terms, conditions, and costs which will apply to its use of those railroads. These uncertainties preclude effective long-term planning and likely will rule out interest in the commercial opportunity by most potential investor groups.

  iii) The operation of a steam charter service is likely to be confined to branch lines in the initial years. During this period, the service will appeal largely to regional, in-province tourists and will be unable to command a level of ticket prices needed to achieve profitable operation.

iv) Over time, and as the operating credibility and reliability of the charter service is established, Engine 6060 may be permitted to operate more widely and on more attractive routings, and to appeal successfully to out-of-province tourists at higher fares.

v) A steam charter service faces a significant challenge in securing the passenger set it needs at the times required and at reasonable costs. In time, the availability of equipment for short-term lease may improve if VIA is down-sized or if a private cruise train system is developed. The passenger equipment of the Central Western Railway (CWR), supplemented with other acquired equipment, may provide another source of passenger rolling stock.

vi) A number of operating and financial advantages would accrue from developing a steam charter service as an adjunct to, or in association with, an existing railway organization or cruise train or railway excursion service. In the longer term, the development of a new cruise train service in western Canada would represent one organizational opportunity. The CWR, which operates a modest scheduled steam service on its own captive line and has indicated a desire to expand the service elsewhere, offers another and probably the most promising alternative at this time.

vii) The financial analyses indicate that a steam charter service is non-viable under most realistic scenarios, and certainly during the initial years of development. The level of profits that may be achieved under certain sets of favourable conditions is unlikely to be sufficiently high to compensate for the risks and organizational commitment involved. In the longer term, and at such time as the charter operation may be able to gain access to rail lines in scenic and popular tourist areas, a modest level of profitability is possible if the services are marketed and priced as a high-quality experience to out-of-province tourists.

viii) The introduction of a steam charter service will provide a new tourism amenity in Alberta and assist in diversifying the geographic distribution of provincial tourism activity. The direct net benefits to the province from increased tourism spending generated by the service could amount to $0.5 to $1.0 million annually after three to five years of operation.

- In summary, a new steam charter service is considered to represent a high-risk venture offering limited profit potential, particularly as a stand-alone operation independent of any other railway organization.

- The type of service that offers the best opportunity for commercial success while at the same time providing provincial tourism benefits would be a high-quality charter operation oriented to scenic mountain or foothills routes or to significant tourism destinations such as Drumheller, and targeted to out-of-province tourists. Engine 6060 could be made available on a leased basis to qualified charter operators committed to this form of rail service development under appropriate safeguards to ensure that the physical and operational integrity of the locomotive is maintained.

1. INTRODUCTION

1.1 BACKGROUND TO THE STUDY

This study was commissioned by the Alberta departments of Tourism and Economic Development and Trade in the spring of 1989 to assess opportunities for the use of Engine 6060, a large steam locomotive which has been restored to operating condition by the Province of Alberta. Widespread public interest and nostalgia for steam locomotives, combined with the relative uniqueness of the engine, present opportunities to utilize 6060 as part of new tourism-based initiatives in Alberta.

The study was carried out by Nichols Applied Management, management and economic consultants, with the assistance of Mr. Jim Crowley, an engineering consultant with Lavalin Inc. who has had a long-standing involvement with Engine 6060 and steam locomotives more generally, and Centennial Rail Ltd., a Denver-based consultancy with specialized expertise in tourist train operations.

The specific objectives of the study are as follows:

1. To identify the opportunities and constraints for using steam locomotive 6060;

2. To profile the various alternatives for using the engine, including operational requirements, marketing aspects, and capital and operating costs;

3. To identify in general terms the net benefits of each alternative; and

4. To recommend a program of use for the engine which best serves the interest of Albertans.

1.2 THE STUDY PROGRAM

The research program was carried out in two sequential phases.

Phase I involved an initial identification and analysis by the study team of the potential uses of 6060, with recommendations regarding those alternatives which appear to offer the greatest commercial and economic potential to the province. The Phase I results were reviewed with the client representatives before proceeding to the Phase II program.

Phase II involved a more detailed feasibility analysis of those alternatives which survived the Phase I screening, and the preparation of a business and implementation plan for the preferred Engine 6060 activity.

In carrying out the study, the research team relied on:

- earlier studies pertaining to Engine 6060 and, more generally, to steam train excursions and passenger rail transportation in Alberta and western Canada;
- published reports relating to other steam train and tourist train operations and attractions and selected interviews with relevant steam train operators;
- information provided by the Canadian National and Canadian Pacific railways;
- interviews with selected tourism industry representatives; and
- its own knowledge and judgment pertaining to steam train operations and feasibility analyses.

The consultants reported periodically through the course of the assignment to a steering committee comprised of representatives from Alberta Tourism and Alberta Economic Development and Trade.

1.3 ORGANIZATION OF THE REPORT

The study begins in Section 2 with a brief overview of Engine 6060, the tourism resource that is the subject of the opportunity analysis.

Section 3 summarizes the findings of a preliminary evaluation of possible long-term uses of 6060 and concludes that a charter program of short and long-haul excursions appears to represent the most attractive use of the engine.

The remainder of the report explores the feasibility of utilizing Engine 6060 in a charter excursion service. Section 4 examines industry and market considerations, operating and equipment aspects, organizational implications, expected financial viability, development risks, and tourism and economic impacts, and formulates general conclusions regarding the feasibility of a steam charter service.

2. ENGINE 6060: A PROFILE

2.1 HISTORICAL AND CURRENT USE

The tourism resource or asset that is the subject of this study is Engine 6060, a "bullet-nosed" mountain-class steam locomotive which was used extensively by the CNR in central and western Canada during the 1940's and 1950's and on a more selective or specialized basis in subsequent years.

The engine was built in 1944 at the Montreal Locomotive Works. Of the twenty units of the same class (U-1f) originally manufactured, only three including the 6060 are preserved. The other two locomotives are on static display.

Engine 6060 originally hauled freight and passenger cars in western Ontario and Quebec and later operated in western Canada, where it was found to be particularly suited to the mountain areas. The engine was retired from active use in 1958 and in 1962 was put on static display in Jasper, Alberta. The steam locomotive was returned to active service in 1973 and for a period of about six years was used by CN and VIA for rail excursions in Ontario, Quebec, and in the New England states.

In 1980, and at the initiation of CN locomotive engineer Harry R.J. Home, 6060 was acquired by the Government of Alberta to mark the 75th anniversary of the province and was transported back to Alberta under considerable publicity. During that year, the locomotive was utilized in a series of excursions commemorating the province's anniversary.

During the subsequent years and until 1986, the engine was stored near Edmonton in the care of the Alberta Pioneer Railway Association. A decision was made by the Alberta Government to restore the 6060 and display the engine at STEAMEXPO, a special exhibit of steam locomotives at Vancouver's EXPO '86. The refurbishment work was done in Jasper in early 1986 and the 6060 was moved to Vancouver in May of that year for the exhibit. The 6060 remained in Vancouver for further restoration work which was carried out in the Royal Hudson shop.

In 1988, 6060 was used in conjunction with the Royal Hudson excursion service on several occasions on its regular operation from Vancouver to Squamish. In the fall of that year, the 6060 returned to Alberta as part of the Great Canadian Steam Railway Excursion, an ambitious and commercially

successful passenger operation which ran Vancouver-Kamloops-Jasper-Prince George-Vancouver. With the 6060 and Royal Hudson 2860 "double-heading" the train, 520 passengers left Vancouver -- the largest passenger train to leave that city in twenty years. The 6060 remained in Jasper while the Royal Hudson train set returned to Vancouver via Prince George. Until recently the engine had been stored in the CN roundhouse in Jasper. During the summer of 1989, the locomotive was leased to the Central Western Railway for use in its new steam train excursion service in east-central Alberta.

Other opportunities for the use of 6060 in the short-term have been explored. These have included the possible display of the engine at major summer exhibitions and fairs in Calgary and Edmonton, and the operation of trial day excursions between Calgary and Drumheller, but various scheduling, equipment, and site logistics difficulties have so far confined these to the employment of 6060 at the Fringe Theatre Festival in Edmonton in August, 1989. Complemented with passenger equipment of the Central Western Railway, 6060 transported fee-paying passengers back and forth along a short rail line temporarily laid along an old right-of-way in the festival area.

The longer-term use of the locomotive -- the subject of this study -- has yet to be defined.

2.2 CHARACTERISTICS

2.2.1 Uniqueness

There are three steam locomotives in Canada that meet federal National Transportation Agency (N.T.A.) standards: the 6060, the City of Winnipeg #3, and ex-CP 1201 which is in the National Museum of Science and Technology in Ottawa. In addition, Royal Hudson engines 3716 and 2860 are provincially certified in British Columbia and expect to be recertified federally in the near future. The 6060 and the Royal Hudson 2860 are Canada's most widely acclaimed engines.

The 6060 in particular has been noted for its authentic restoration and is also the most widely travelled of the Canadian steam locomotives, having been used across the country and in the New England states.

Engine 6060's size and tractive effort are second only to the Royal Hudson locomotive, and only slightly less.

2.2.2 Current Condition

The 6060 is currently in good operating condition. It received a new boiler and running gear during its refurbishment in Jasper and Vancouver. One item of repair that remains outstanding and which will improve its reliability is the installation of an Elesco feedwater heating system. Failure of one of the two existing inspirators would make the 6060 inoperable for some time. The estimated cost of the repair is $30,000 to $50,000.

2.2.3 Operating Constraints

By virtue of its age, technology, and other physical features, there are a number of operating constraints to the use of 6060. These are summarized below:

- **Track:** It is generally recommended that the track used by 6060 be a minimum 100-pound rail with a maximum curvature of 16°. Curvature is not a constraint on most rail lines.

- **Minimum speed:** The minimum recommended speed for the locomotive is 30 m.p.h. in order to maintain battery charge and use water efficiently. The minimum speed can be overcome by installing head-end battery power, which implies the use of more expensive passenger cars.

- **Maximum speed:** The 6060 is designed for a cruising speed of 60-65 m.p.h. and is capable of speeds up to 100 m.p.h.

- **Grade:** The maximum grade for the 6060 is 2% on a climb and approximately 1% on a downhill run. Grade is not a constraint in CN territory where the maximum grade is 1.1%.

- **Water:** 6060 has two tenders with a water capacity of 22,000 Imperial gallons. The engine uses approximately 100 Imperial gallons per mile. It is recommended that the 6060 operate no more than about 150 miles before watering to maintain sufficient reserves.

- **Fuel:** Fuel capacity in the 6060's main tender is 5,000 Imperial gallons and the engine uses approximately 10 Imperial gallons per mile. The 6060 should not run more than 400 miles before refuelling.

- **Distance:** 6060 should not run more than about 250 miles per day to allow for maintenance and inspection.

- **Operating Days:** The boiler of 6060 would need to be washed out about every five days if a clean water supply is utilized. Much of the available water in Alberta has a high mineral content, causing scaling in the boilers, and for this reason the engine should not be used more than three consecutive days between cleaning.

2.2.4 Maintenance

Steam locomotives represent an obsolete technology, and require maintenance facilities, parts, and specialized labour that are not readily available. The on-going maintenance requirements of the 6060 must be considered in any examination of operational alternatives for the engine.

Three facilities have been identified in western Canada that can be used as a storage and maintenance base for 6060: the Alberta Pioneer Museum at Namao; the CN Jasper roundhouse; and, the Royal Hudson steam shop in Vancouver.

The Namao facility was built specifically for the 6060 in 1980 when the engine was purchased by the Alberta Government. Although it has an attractive location, it lacks the required services to do any but the lightest maintenance on the engine.

CN's Jasper roundhouse, where 6060 has been housed until recently, has been available on a short-term lease basis. The only services lacking in this facility are an overhead crane and a drop pit for removing wheels.

The Royal Hudson shop in Vancouver is the only fully-equipped steam locomotive servicing shop. Its distance from Alberta makes the use of this facility for maintenance purposes a costly option.

Personnel

Trained personnel present another maintenance concern. It is important to use paid, experienced, professional, and accountable personnel to maintain the engine. Trained volunteers may be useful in terms of offering guidance

and expertise, and handling non-critical items, but extensive reliance on them can compromise the certification of the engine and its operational credibility to the railways.

Personnel experienced with steam locomotives are aging and in short supply. In the longer term, it may be necessary to train new mechanics to keep 6060 operable.

Parts

The final maintenance concern involves the availability of replacement parts for the 6060. Parts must be built or procured from retired steam locomotives. This is often a costly and time-consuming process, and adds to the risks of relying on an uninterrupted and continuing use of the locomotive.

However, with due diligence, the 6060 can be properly maintained at a level necessary for certification and sustained use. This necessarily implies, however, a continuing and considerable outlay of maintenance expenditures.

2.2.5 Summary

The province has in the engine 6060, a unique steam - era resource that has potential as a tourism generator. Engine 6060 is a faithfully restored mountain-class engine in fully operational condition and there are no constraints other then those normally inherent in the operation of a steam locomotive that limit its use as the centerpiece of a steam excursion service or for static display.

3. PRELIMINARY IDENTIFICATION AND EVALUATION OF OPPORTUNITIES

3.1 INTRODUCTION

A preliminary evaluation of potential long-term uses of Engine 6060 was incorporated in the study program with the purposes of:

1. identifying apparent opportunities for the use of the locomotive and screening those against a number of pre-determined evaluation criteria; and

2. recommending, on the basis of this preliminary evaluation, those opportunities appearing to warrant a more detailed feasibility assessment in the subsequent phases of the assignment.

The results of the analyses carried out and of the conclusions reached are discussed in this section of the report.

3.2 OPPORTUNITIES

The following long-term usage options were examined in the preliminary evaluation:

- use of the locomotive in a regularly-scheduled rail excursion service (both long and short-haul opportunities were assessed);

- use of the locomotive in charter rail excursion services (charter excursions typically are operated on a less regular basis than scheduled services and the point-to-point routings may differ for the various tour offerings);

- employment of the engine in a theme park development as part of a visitor ride or attraction;

- use of the engine as a tourism ambassador for the province and in general tourism promotional activities;

- periodic use as an attraction in civic celebrations or fairs;

- designation as a museum-style static display; and, finally
- use as a stand-alone landmark or visitor attraction .

Other options for the 6060 include the outright sale or long-term lease of the engine to private enterprises for use in public relations activities or to museums outside the province.

The identified opportunities were analyzed from the perspective of the following factors or criteria:

- the availability, relative attractiveness, and other relevant features of possible routings for charter or scheduled rail excursions;
- indicated financial feasibility and risk of the alternative usage options;
- operational and organizational requirements and constraints;
- potential appeal to the tourist market generally and to particular market segments, and the extent of linkages with other tourism amenities and services in the province;
- provincial and regional economic impacts, including increased visitor expenditures and new job creation; and
- other considerations.

3.3 SUMMARY OF FINDINGS

The preliminary analyses conducted by the study team indicated that a charter program of short or long-haul excursions represents the most attractive opportunity from the standpoint of tourism development, engine utilization, operational potential and financial viability. The further definition and exploration of this particular option is the major focus of the remaining sections of the report.

The use of the steam engine on a regularly scheduled service appears to be largely precluded by operational constraints in respect of those rail lines offering scenic value, interesting origin and destination points, and proximity to potential customers. There are minimal opportunities within the province

to develop marketable tourist passenger services on captive railways. In addition to these considerations, the development of a scheduled steam rail service implies considerable financial risk to prospective investors.

The operational use of 6060 in a theme park development is likely to be uneconomic because of the associated operating and maintenance requirements and costs of this large engine for such use. As well, there is at this time no obvious facility in the province that might make appropriate use of the engine.

The positive public image that is attached to steam locomotives -- and the curiosity and interest of many people in them -- makes the use of 6060 for general tourism promotion and as an attraction in local festivities a possible opportunity. The occasional use of the engine for these forms of promotion, although not incompatible with its employment in an excursion service, may offer some local and provincial tourism benefits but is unlikely to be commercially attractive. The experience gained elsewhere in using steam locomotives for promotional activities has been that the associated operational costs are prohibitively high relative to the tourism benefits achieved.

Engine 6060 may also be used as a stand-alone landmark or museum-style static display. The potential tourism benefits of this use would be modest and the current operating condition of the engine would not be exploited. A static use of the engine would nonetheless convey continuing costs of maintenance if the locomotive was to be kept in running condition.

The sale or lease of Engine 6060 to a private enterprise for use in its public relations activities would provide an opportunity to recoup expenditures on the locomotive to date and to pass on to another organization the obligations of on-going maintenance. This option remains open but no organization has expressed interest in acquiring the engine, nor would such use necessarily support a wider tourism development of the province.

The sale of the engine to a museum or other organization outside the province is also a possibility but this option also would not be consistent with the resources expended to date to use 6060 in some form of provincial tourism role.

For the reasons summarized above, it was concluded that the use of 6060 in an excursion charter service would be subjected to a more detailed feasibility assessment.

4. FEASIBILITY EVALUATION OF STEAM CHARTER OPERATION

4.1 INTRODUCTION

This section of the report examines the feasibility of utilizing Engine 6060 in a charter excursion service. A charter service is defined as a passenger train service that operates on a periodic or occasional basis. Under a charter operation, the individual passenger runs may be quite different from one another in terms of destination and length of trip, cost, level of service, and passenger market.

These charters may include short-haul movements where the trip is completed in a day or less or long-haul services which extend beyond one day. In the latter instances, passengers may be accommodated overnight on sleeper cars or disembark at points en route and stay in commercial facilities.

4.2 INDUSTRY STRUCTURE

A considerable number of passenger railway operations exist in North America and elsewhere in the world. It is useful to review the various types of services that are available in the context of assessing the most appropriate operational niche for Engine 6060 and the pricing parameters consistent with that type of service.

A number of scheduled steam locomotive and vintage rail services are offered in various parts of Canada and the U.S. In many instances, these function on a seasonal basis, with frequency depending on demand, in some instances on a daily basis but more commonly on weekends and holidays. In general, the excursions follow a constant routing. From a marketing standpoint, the operations typically feature the type of equipment used, the scenery and attractions en route, and the trip experience. The trips range from those of very short duration of an hour or so to full-day excursions. The trips of a half-day or less generally command adult tariffs of about $10 to $20 while the full-day services are priced at roughly $30 to $40. The Royal Hudson service, which runs from North Vancouver to Squamish, falls in this latter category, while the new CWR excursion is typical of the former.

A major share of the North American rail passenger market is attributed to conventional, diesel-powered rail operations which provide regularly-scheduled service. These would include, for example, the Amtrak and VIA systems as well as more tourism-oriented services such as those offered by the Alaska Railroad. Very roughly, the price charged by these services, exclusive of overnight accommodation, is in the order of $100 per day of passenger travel. Scheduled cruise trains, which offer a higher standard of service, comfort, and amenities at a higher price, and which include for example the Orient Express, may operate side by side with the more conventional services.

Finally, there are the rail charters, which can be of a relatively short duration of one or two days, or extend as long as two weeks or more. Charters may utilize vintage steam or modern diesel equipment, although those which extend beyond a few days almost inevitably rely on modern equipment. The longer-haul charters generally are marketed as cruises, featuring a high level of amenity and targeted to an upscale passenger market. The price for these cruises can range from $150 to almost $300 per day, but net of accommodation, meals, and other special services probably equate to somewhat over $100 per day for the transportation component.

The future operation of 6060 appears to be most compatible with this latter segment of the industry.

4.3 THE MARKET

A steam charter operation will appeal to a number of potential markets, including the following:

- **steam enthusiasts**, who are attracted to the use of steam locomotives and historic passenger cars. These individuals will travel considerable distances for the express purpose of travelling behind, viewing, and photographing a unique locomotive. There are a considerable number of steam locomotive excursions operating in various parts of North America and abroad which actively market themselves to this target group. Other features of the excursion, such as en route scenery and attractions, will reinforce the primary appeal of the service. This market segment is a relatively small one.

- **rare-mileage collectors**, who are attracted to excursions offered on little-travelled rail routes.

- **general excursionists**, who may be interested in the scenery, in the attractions en route and at destinations, or in the total experience, including the various amenities and services provided as part of the travel package. This market may be further segmented, for example, as among cruise train enthusiasts, seniors, tour groups, conventioneers, family tourists and others. The use of a steam locomotive may be of secondary interest to these groups. Indeed, for those interested in a full-service cruise train excursion, the use of steam locomotives and older, less comfortable, passenger equipment can detract from the appeal of the charter program.

The steam enthusiasts and the mileage collectors constitute a premium market because they tend to be tourists who will come to the area especially for the steam excursion and are relatively price insensitive. Notwithstanding the importance of marketing to these segments, a steam-oriented rail service will need to rely heavily on the larger market of excursionists in order to fill the available seats.

In general, shorter-haul trips in less scenic areas that are located away from the mountains will tend to appeal to family-oriented passengers from the local and regional markets. This market is likely to be fairly price-sensitive.

Longer-haul, higher amenity, and more scenic tours will appeal particularly to out-of-province tourists, who are likely to be less price-sensitive than in-province users, but are inclined to demand a high level of service. Success in reaching this market will require a committed marketing effort.

Long-haul cruise trains are becoming increasingly popular in many parts of the world, but comfort, convenience, service, and reliability assume particular marketing importance. The use of a steam locomotive is unlikely to be significant to much of the potential cruise train market and may, in fact, compromise some of the other decision factors that weigh in the minds of cruise enthusiasts.

The key considerations that will play a role in the market appeal of a steam charter operation are the following:

- the use of a relatively unique, historical steam locomotive and passenger set;

- the scenery along the route;

- the attractions at the destination and at points en route;
- the comfort and on-board amenities of the service;
- price; and
- the level and type of promotion and marketing.

Recognizing that various operating and equipment constraints may exert a considerable influence on the development of any steam charter operation, the study team has nonetheless identified general strategies which would appear to be most responsive to the market:

1. operate in the province's mountain region to capitalize on the scenery and related tourist appeal of the Rockies;
2. operate in the Banff-Calgary or Jasper areas to combine (1) above with the large market of tourists in those areas;
3. operate in the summer months to coincide with peak tourist flows;
4. provide a high standard of service and amenities and target the trips particularly to out-of-province visitors;
5. test the market response, initially with short-haul excursions of one day or less; and
6. alter routings to appeal to different markets and test the sensitivity of the market to different service offerings.

4.4 OPERATING CONSIDERATIONS

4.4.1 Routes

An extensive railway system is in place in Alberta and elsewhere in western Canada and a number of these lines provide opportunities to develop interesting scenic charter programs.

From a physical operating standpoint, some rail lines may pose constraints to the use of Engine 6060 because of a lack of water for the engine's boilers, tight curves, an absence of wyes for turning the engine, and light-weight rail. However, and notwithstanding these potential obstacles, the engine is capable of operating on most lines in Alberta.

A major constraint facing potential steam charter operations is securing access to particular routes from the national railways, Canadian National (CN) and Canadian Pacific (CP), which own and operate almost all of the rail system in the province. These railways have as their primary mandate the cartage of freight, and passenger rail opportunities are of incidental interest to them. Steam-based operations are further removed from their field of interest because of the greater concerns these pose in terms of operational reliability and possible disruption to their systems and because of the unique infrastructure and manpower demands that may accompany them.

In correspondence communicated to Alberta Tourism, CP has indicated that it has a stringent policy of declining requests for the operation of steam locomotives. CN has stated that the use of steam engines on its main lines is not acceptable, although it would consider branch line operations under specific provisions.

There would appear, therefore, to be opportunities to utilize branch lines of the CN although it is likely that the level of traffic, types of freight handled, and other circumstances pertaining to particular routes would all be considered by CN in approving use of any particular branch line. Notwithstanding the indicated stance of CP toward steam operations, it perhaps can be speculated that it too might consider authorizing a steam charter operation on some branch lines under certain circumstances.

The remaining route that is available in Alberta is the line owned and operated by the Central Western Railway Corporation (CWR) and extending from near Camrose to a point north of Drumheller in east-central Alberta. During this past summer of 1989 CWR initiated weekly scheduled excursions along its rail line using steam locomotives, including 6060, which was made available to the company by the Government of Alberta on a leased basis.

It would seem reasonable to assume that as the operating reliability of a steam charter operation becomes more firmly established over time, the railways may become more receptive to the use of 6060 on busier lines. The implication of this to a charter operation is the need to build from earlier successes, over time demonstrating a competence and capability to the

national railway companies. It will be particularly important that the charter programs developed in the initial seasons not be excessively ambitious nor beyond the resources of the excursion operator.

There is a possibility that a well-established steam-based excursion service might ultimately be permitted on main lines with suitable safeguards and under certain conditions but this eventuality cannot be assured and certainly is not promising at this time.

Confined to branch line operations, many of the particularly scenic mountain routes which offer ready access to the major provincial tourist markets are effectively precluded from steam charter service. This reduces the scope for offering long-haul rail cruises and marketing the service to extra-provincial and international tourists. It also limits the passenger fares that can be charged.

A partial listing of some of the potential branch or secondary mainline routes that might be available to a steam excursion service is provided below.[1]

Railway	Provincial Region	Description
CN	Northeast	Edmonton - Fort McMurray
		Edmonton - Grand Centre
	North	Edmonton - Athabasca
	Northwest	Edmonton - Peace River
		Edmonton - Hay River
		Edmonton - Whitecourt
		Grande Prairie - Winniandy (Alberta Resources Railway)
	West	Ansell - Luscar (Coal Branch)
	Central	Calgary - Drumheller
		Drumheller - Hanna - Oyen
CWR	Central	Ferlow - Dinosaur Junction

1. Various physical restrictions may apply to the use of these lines and would need to be assessed in detail to confirm their potential utilization for steam excursions.

Railway	Provincial Region	Description
CP	South	Herronton - Vauxhall Aldersyde - Fort Macleod Bassano - Empress

CN, CWR, and CP routes are separately identified although the latter railway has shown little receptiveness at this time to the employment of steam locomotives on its system.

The most interesting of these routes, from the standpoint of access to visitor markets and destination interest is the Calgary-Drumheller run. In terms of scenery, the Coal Branch, Fort Macleod, and Grande Prairie routes offer some interest but are not readily accessible to tourist markets and may pose logistical problems because of the nature or extent of freight movements on these lines.

A difficulty faced by a steam charter operator in using only branch lines is the need to make arrangements for transporting the train set to and from the selected charter route.

4.4.2 Scheduling

One of the major advantages of a charter excursion service is the ability to plan well in advance of the charter event, allowing ample opportunity to schedule trackage and crews, carry out maintenance, organize the required equipment, and make the necessary arrangements for ancillary passenger services. Marketing and promotional activities can be undertaken and charter offerings adjusted to meet the indicated market demand.

Recognizing the marked seasonality of tourism in Alberta, a steam charter operation is likely to be oriented to the period from late spring to early autumn. As well, winter operation is problematic because it would pose greater maintenance and operational demands on 6060 and would be more demanding from the standpoint of the quality of passenger equipment needed.

An important factor that will need to be considered in scheduling charters will be the availability of a passenger set. The dilemma facing a commercial charter operator is that while the acquisition of a passenger set offers scheduling flexibility, the capital acquisition may not be justified financially if only a few charters per year are operated. On the other hand, a reliance on the use of leased equipment can seriously constrain the scheduling

opportunities available to the charter operator. The most obvious source of passenger equipment on a short-term lease is VIA Rail, but excepting the possible use of equipment residing in Jasper and Calgary during two-day layover periods (under VIA's present operational arrangements), VIA's passenger cars would primarily be available before May 15 and after October 15, a period which is not the most opportune to operate steam charters. The possible reduction in VIA services that may occur in the coming years may make leased passenger equipment more readily available to a charter operator.

4.4.3 Operating Manpower and Facilities

Train crews for rail excursion operations are supplied by the host railway company. The costs of this labour are passed on to the operator through trackage and other fees and will depend in part on the amount of dead-heading involved in positioning the crews.

Maintenance personnel capable of working on the steam engine would need to be provided by the excursion operator. The maintenance requirements associated with steam engines are large and were a major reason for their replacement by diesel locomotives. Maintenance costs are directly related to usage of the engine but regular requirements include greasing, washing out the boilers, inspections, etc. Monthly certificates must be filed by a mechanical officer. No major overhauls of 6060 are likely to be required for some time because of the extensive work carried out recently on the engine's boiler and running gear.

For a steam charter service that might operate 6060 on an infrequent basis, the maintenance staff may be obtained on a contract basis. If the steam charters were operated as a sideline to a regular cruise train or freight business, the maintenance staff might be largely provided by existing full-time staff having the requisite steam experience. Organizational issues will be discussed in more detail in Section 4.5.

The maintenance of 6060 also requires storage facilities and shops capable of accommodating the engine. The engine had been stored until recently in the Jasper roundhouse of CN. During the coming winter season, the engine will be stored in a Cominco warehouse facility in Calgary. In future it may again be stored at the Alberta Pioneer Railway Association Museum near Namao.

4.4.4 Insurance

The provision and cost of insurance will be a major consideration for any passenger excursion service. Insurance must cover potential damage to the railway and to rail operating equipment, as well as liability to passengers and third parties. CN has indicated that it requires a minimum coverage of $5 million per occurrence for bodily injury and property damage.

Indications are that securing the required insurance coverage may be prohibitively expensive for any stand-alone steam charter organization. Hence there appears to be an obvious financial benefit if the charter operation is able to participate under the umbrella coverage of an operating railway, or major passenger rail or charter service such as VIA.

4.5 EQUIPMENT REQUIREMENTS

4.5.1 Locomotive Equipment

Engine 6060 has undergone considerable repair and maintenance work in recent years and is in a good state of operational readiness. However, unforeseen breakdowns can occur with any piece of equipment and particularly so for older equipment. It is likely that, under most circumstances, the railways on which the engine operates will require that a back-up locomotive accompany the charter or at least be readily accessible. This requirement may be avoided where the engine is operated on little used branch lines and where the consequences of freight traffic disruption are limited.

Diesel locomotives are the preferred back-up equipment from the host railroad's perspective, and these are readily available on a leased basis. However, the accompaniment of a diesel engine can detract from the "authenticity" of the steam excursion, particularly insofar as steam enthusiasts are concerned. This may be an unavoidable aspect to the use of steam power, certainly until such time as operational reliability can be proven.

The availability of back-up locomotive power is also necessary from the standpoint of adhering to charter schedules. Recognizing that the use of steam equipment would represent an important part of the market draw for a proposed charter operation, under ideal circumstances a back-up steam locomotive would be available in case of unscheduled repairs to 6060. This may be economically impractical for a steam charter business that operates only occasional trips.

The Central Western Railway, which utilized 6060 for its 1989 summer passenger steam operation, has a second steam engine and other diesel equipment available to it. However, the rail lines being used are not sufficiently busy that a main and back-up locomotive is required on each run.

4.5.2 Passenger Equipment

The availability and cost of a passenger train set are significant factors in developing a commercially viable steam charter service.

In the case of short-haul excursions, vintage passenger cars may be satisfactory and, indeed, may be preferred in the context of their historical compatibility with the locomotive. Older, open-window carriages are conducive to picture-taking and hearing the sounds of the steam engine.

For longer multi-day cruises serving an up-market customer base, comfort becomes more essential and modern, air-conditioned and heated cars are required. This equipment also assumes more importance in operating during the shoulder seasons, when the weather can be cool.

It is difficult to justify the acquisition or long-term lease of a passenger train set for a steam rail operation that has a limited number of charter runs each year, because the capital and maintenance costs must be amortized over a relatively small number of passenger-kilometers. The most economic alternative for acquiring the necessary passenger cars is through a short-term lease from a regularly scheduled railway or cruise train operator.

The rental of equipment from VIA is a possibility, but the greatest opportunities here are during periods of low tourism activity in the late shoulder and winter seasons.

Although there is some potential to operate steam charters in the late fall and early spring, this poses marketing and equipment challenges. VIA equipment might be available for lease during two-day lay-overs at Jasper and Calgary, although this makes scheduling very tight and constrains the routes that can be offered if the equipment must be dead-headed to and from the charter points. VIA is likely to be very demanding in any lease arrangement because of the need to adhere to its scheduled passenger services.

VIA's passenger services are currently undergoing considerable scrutiny and re-structuring, and its operations are to be significantly reduced. To the extent that this will reduce VIA's demand for passenger cars, the opportunities for short-term leases to a steam charter group will be enhanced.

There has been some discussion as well of the possibility of developing a private cruise-train service through the Rocky Mountains either as a replacement or an additional service to the VIA operation. A steam charter service might be able to acquire passenger cars from the private cruise train operator when they are not otherwise utilized.

The Central Western Railway, which has operated weekly scheduled steam services on its rail line, has four or five older passenger cars and these, possibly supplemented with others, might also provide the required equipment for occasional steam charters, particularly short-haul excursions.

4.6 ORGANIZATION

The key organizational functions that will need to be performed in operating a steam charter service are the following:

- **Marketing and Sales Promotion**. Marketing contacts will need to be made with tour wholesalers and operators, convention centers and organizers, tourism promotion representatives, steam train societies, rail enthusiast groups, and local, national, and foreign media. Brochures will need to be designed and distributed and ticketing, tour information, and reservations services organized.

- **Operations Planning and Organization**. These activities involve the negotiation of trackage rights with the railways and the planning of train and crew schedules. Commitments for locomotives and passenger cars, including possible back-ups, will need to be arranged. Detailed logistical planning for water, fuel, engine turnarounds, en route maintenance, overnight lay-overs, and passenger facilities will be required as well.

- **Equipment Maintenance**. The charter operator will need to arrange for the on-going maintenance of locomotives and owned passenger cars. The required maintenance

personnel, some of whom will need specialized expertise, spare parts and repair equipment, storage and repair facilities will all need to be organized.

- **Support Services**. A variety of support services will need to be provided by the steam charter operator. For example, arrangements for connecting transportation, overnight accommodation, meals, and side attractions for passengers may be required.

In reviewing the organizational alternatives for a potential steam train operation, it is concluded that the preferred organization should have:

- the focused mandate and commitment to develop a commercially successful charter service; and,

- the overall and integrated responsibility for all aspects of marketing, operation, and maintenance.

Under the likely situation where even a modest number of charter trips are offered on an annual basis, the charter organization will require an on-going presence for planning, marketing, and maintenance. The charter service is unlikely to succeed if operated on a "part-time", volunteer-oriented, or project-specific basis. The financial and operational credibility of the organization will be important for establishing relationships with major tour operators and securing the cooperation of the railways to operate on their rail lines.

The major difficulty that is faced, however, is supporting the fixed overhead costs of an organizational structure through a limited number of trip offerings each year. Some services can be contracted on an as-required basis but even with this the costs of maintaining an organization are likely to be relatively high.

The study team is of the view that a rail society or some other association operated on a largely volunteer basis is unlikely to achieve the marketing and financial success that is required of the potential service. It is similarly unlikely that government or the national railways would be interested in operating a tourism-oriented steam train service. VIA, under pressure to rationalize its scheduled rail services, is also an unlikely candidate.

From the standpoint of organizational and operational efficiency, the most logical alternative appears to be for the steam train service to be operated as an adjunct to an existing passenger or freight railway operation. This might: 1) allow administrative overheads to be cost-shared with other activities; 2) provide opportunities to utilize railway equipment and particularly passenger cars on a more reliable and cost-efficient basis; 3) reduce insurance costs; 4) assist in securing the cooperation of the railways through a demonstrated operating experience and credibility; 5) reduce costs for equipment maintenance, repair, and storage; and 6) allow the new service to be introduced on a gradual, phased-basis to minimize front-end risk.

Various proposals have been advanced recently by different parties for the private operation of a western cruise train, possibly replacing services now provided by VIA. In the event that such an operation materializes, a steam train charter service might be offered as a supplement or adjunct to the main passenger services. The steam operation would appeal to somewhat different target markets and offer a wider variety of charter alternatives to prospective customers. The opportunity to tie the steam charter service to a cruise train operation must be considered speculative at this time because of 1) the uncertainties surrounding VIA, and 2) the likelihood that any private cruise train service that might evolve would logically focus its efforts in the early years on a conventional, long-haul, cruise service using diesel locomotives, and delay any pursuit of the more specialized and risky steam train opportunity.

The CWR, which recently operated Engine 6060 on a leased basis, satisfies many of the desired organizational criteria for a steam charter service. More specifically:

- The CWR, through its wholly-owned subsidiary Central Western Rail Services Ltd., has commenced operation of steam excursions on its own rail line which extends from near Camrose to just north of Drumheller. The firm has expressed the desire to expand its services to the branch lines of CN and CP elsewhere in central Alberta.

- The CWR has an existing administrative structure which can assume some passenger service-related operational functions. However, the railroad is small, tightly operated, and oriented to freight service and it will need to expand its staff and administrative and marketing overheads in order to effectively operate a passenger excursion service.

- From an equipment standpoint, the CWR has a second steam locomotive in addition to 6060, as well as diesel locomotives and a small passenger set.

- The organization has equipment maintenance staff and facilities, although these clearly would need to be expanded and enhanced to accommodate steam locomotives and passenger equipment.
- As an operating railway, the firm reportedly has secured the required insurance for its passenger services at a relatively low incremental cost over its basic insurance costs.

- The CWR, which must adhere to federal operating and equipment standards, has some credibility with the national railways which will enhance its ability to obtain trackage rights for charter services.

At the same time, there are some concerns regarding the appropriateness of CWR as a vehicle for operating a steam charter operation. These are as follows:

- The existing CWR passenger service is oriented toward short-haul trips, offering a minimum of frills at modest cost. It is likely that the service will appeal largely to a regional tourism market. Notwithstanding the fact that CWR can offer the service on its own rail line at modest incremental cost, the financial feasibility of the operation on a fully-costed basis is uncertain. In order to provide a viable steam charter service on non-captive railways, a much higher tariff schedule will likely be required to off-set the higher costs of operating off CWR tracks and the operation will need both to provide a higher level of service and to market itself more strongly to extra-provincial tourists. CWR might face some difficulties in operating the two types of passenger service in juxtaposition to one another. Indeed, the current product offering and the market image provided by it may compromise CWR's ability to appeal to a more selective upscale tourism market.

- Largely precluded in the short-term from operating on rail lines that offer particular scenic appeal (and which are for the most part removed from major visitor centres), successful operation of a steam charter service will require a strong marketing capability to achieve high utilization rates and ticket prices. These marketing requirements are quite different than those needed to support CWR's conventional freight business or for that matter its existing passenger service, and it is unclear whether the firm will be able to respond organizationally to the marketing challenge that will be presented to it.

- The 6060 is a large, heavy engine, the operation of which is severely limited, certainly in speed, on the light-weight CWR rail line. The engine would be more appropriately used on other rail lines, and those pose greater difficulties of access, scheduling, and cost. With its own rail line and captive passenger service, it is unclear how committed CWR might be to pursuing charters on other rail lines that pose these additional problems but which may be more suited to 6060.

- As a small, short-line operation, CWR may find its resources strained to provide the care and maintenance required by the 6060 and its other steam locomotive.

Notwithstanding these reservations, and at least until some private cruise train service is developed in western Canada, CWR appears to offer the most promising organizational option for employing 6060 in a steam charter operation.

4.7 FINANCIAL ANALYSIS

The financial viability of a steam charter service has been examined by the study team under various sets of assumptions. In the final analysis, the ability to attract a commercial operator for such a service will depend on an assessment of potential profitability and of the balance of risk versus return of the venture.

A number of uncertainties that will influence the level of profitability will bear on the proposed service. Insurance rates, trackage fees, and the cost of required passenger equipment will significantly affect returns and the financial pro formas have been tested under likely ranges of such costs.

The types of routes on which the steam service will be permitted to operate by the railways will affect the prices that can be charged and the utilization of the service. The number of service offerings (which will be governed by market response, equipment availability, and various operational considerations) will also have an important impact on revenues.

Table 1 provides a summary of the financial performance that might be expected from a steam charter operation in both a short and longer-term horizon. The pro forma operating results shown are premised on the use of leased equipment, and reflect operating costs considered realistic for an independent operator utilizing CN or CP rail lines. The passenger tariffs assumed are deemed achievable but on the high-end of the likely range of pricing.

Under the operating parameters and assumptions used, the charter service would incur operating deficits amounting to approximately $268,000 annually in the initial years, and about $28,000 in subsequent years when the service is more established, has an expanded scale of activity, and is able to attract out-of-province tourists prepared to pay higher tariffs. In the early years, the service would appeal largely to a family-oriented local and regional market and the realizable ticket prices would reflect this. The financial results include the full costs of maintaining Engine 6060. It should be recognized, however, that the continued preservation of the locomotive in an operational condition would in any case imply annual costs estimated at $65,000, and therefore the deficits indicated should be reduced by that amount to indicate the incremental costs in excess of a status quo or "do-nothing" approach.

The consultants have examined the sensitivity of financial performance to changes in key underlying variables such as fares, unit operating costs including trackage and insurance fees, equipment costs, passenger loads, and the number of charters or charter distances per year.

The results of a number of these sensitivity analyses are summarized in Figures 1 to 3. More detailed supporting data are included in the Appendices.

TABLE 1
Steam Charter Opportunity
Financial Operating Projections: Base Case

	Short-Term (within 3-5 years)	Long-Term (after 3-5 years)
Key Assumptions		
Passenger cars	Leased	Leased
Capacity (passengers)	400	400
Load factor	80%	85%
Price per seat mile	$0.30	$0.60
Trips per year	7 one-day @ 150 miles	12 one-day @ 150 miles
	1 two-day @ 450 miles	4 two-day @ 425 miles
Total operating miles	1500	3500
Financial Results (Annual Basis)		
Revenue	$144,000	$714,000
Operating Costs		
Engine maintenance [1]	$119,500	$160,700
Operating costs [2]	$202,000	$371,500
Equipment lease [3]	$ 90,000	$210,000
Total	$411,500	$742,200
Surplus (Deficit)	($267,500)	($28,200)

1. Includes labour costs for chief mechanical officer and other maintenance personnel, and costs of boiler and running gear maintenance, light repairs and facility rental.
2. Trackage @ $35/mile; insurance @ $31/mile; administration and marketing @ $75,000/annum; backup locomotive power @ $11/mile. Fuel and water costs based on consumption of 10 gallons and 100 gallons per mile, respectively.
3. No lease charges assumed for 6060. Estimated costs for passenger set based on 10-passenger car set plus a steam generator and a baggage car with 400-passenger capacity @ $0.15 seat/mile or $12,000 for an average day of 200 miles. Included in this estimate are car attendants and a simple meal service.

It is broadly concluded from the financial analyses carried out that:

1. Within the range of operating and marketing parameters that the steam train operation is likely to face, the project has limited opportunities to realize satisfactory levels of financial performance. In the early years of operation in particular, a steam train service is likely to incur substantial financial deficits. In the longer term, and as the service is able to expand the level of tour offerings and reach a more exclusive market, there are improved opportunities to reach a profitable level of activity. However, failure to achieve desired results in any of several financial and operational variables may compromise profitability. Overall, there is considerably more risk of "down-side" versus "up-side" potential for profitable operation of a steam train service.

2. The realization of profitable operation of the steam service requires the following: 1) minimizing capital investment for rolling stock; 2) achieving high prices by developing and marketing the excursions as more exclusive, full-service attractions to out-of-province tourists; 3) offering several charter trips each year in order to spread overhead costs across a relatively large base of activity; 4) negotiating low trackage and insurance rates; and 5) tightly controlling administrative, operating, and maintenance costs.

3. The analyses suggest that the financial risks associated with a steam train service are reduced and the prospects for profitable operation enhanced if the operation is organized as an adjunct to another railway-related firm instead of as an independent venture. In association with a railway or rail passenger service, the steam charter service can benefit from the use of facilities, equipment, and manpower on a marginal costing basis and is likely to secure lower insurance and possibly trackage costs than would a stand-alone operation.

4.8 RISK ANALYSIS

This section of the report presents a brief summary of the risks attached to the development of a steam train operation.

Figure 1
Steam Charter Service: Sensitivity of Financial Performance to Ticket Prices

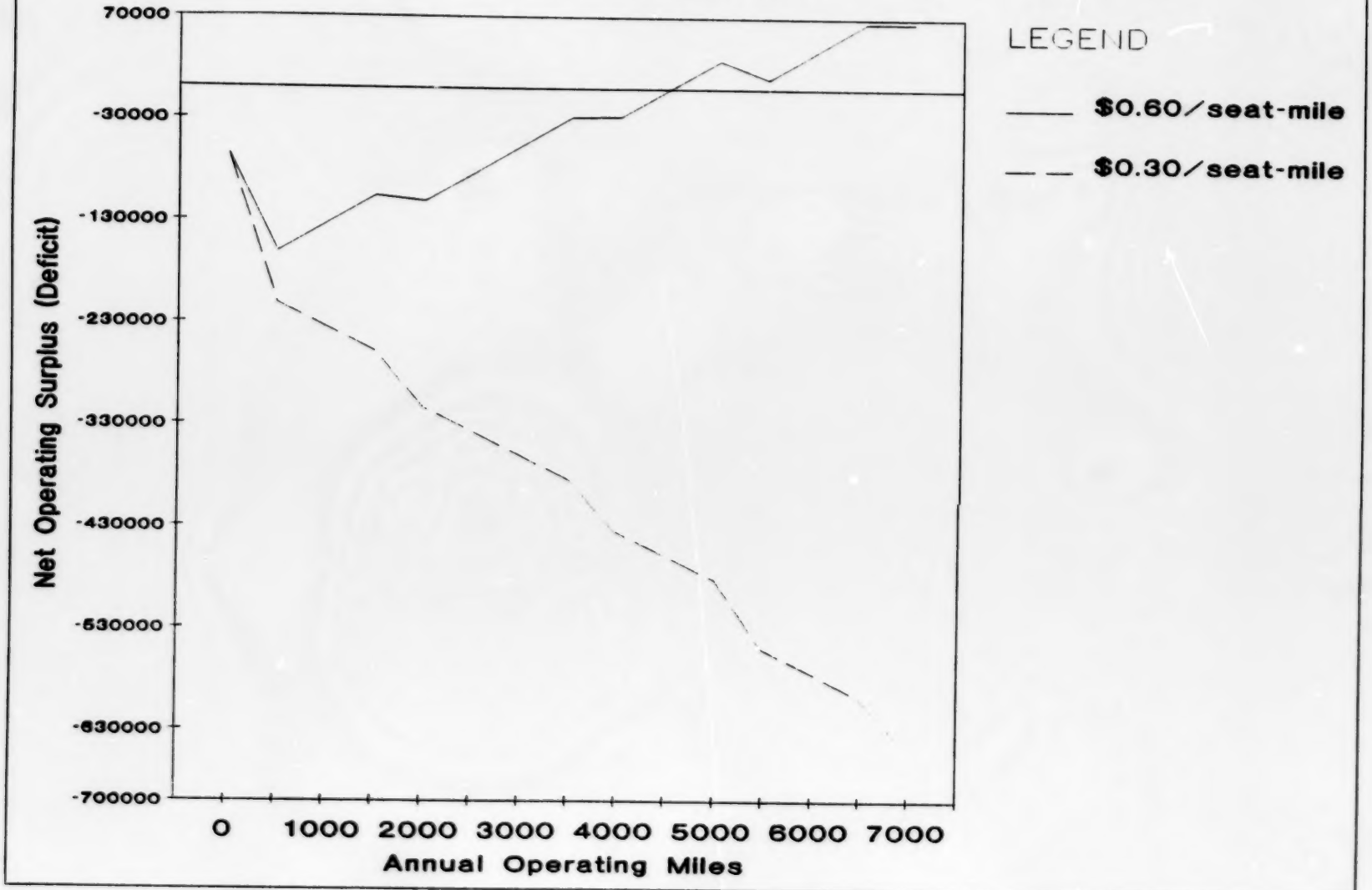


Figure 2
Steam Charter Service: Sensitivity of Financial Performance to Equipment Costs

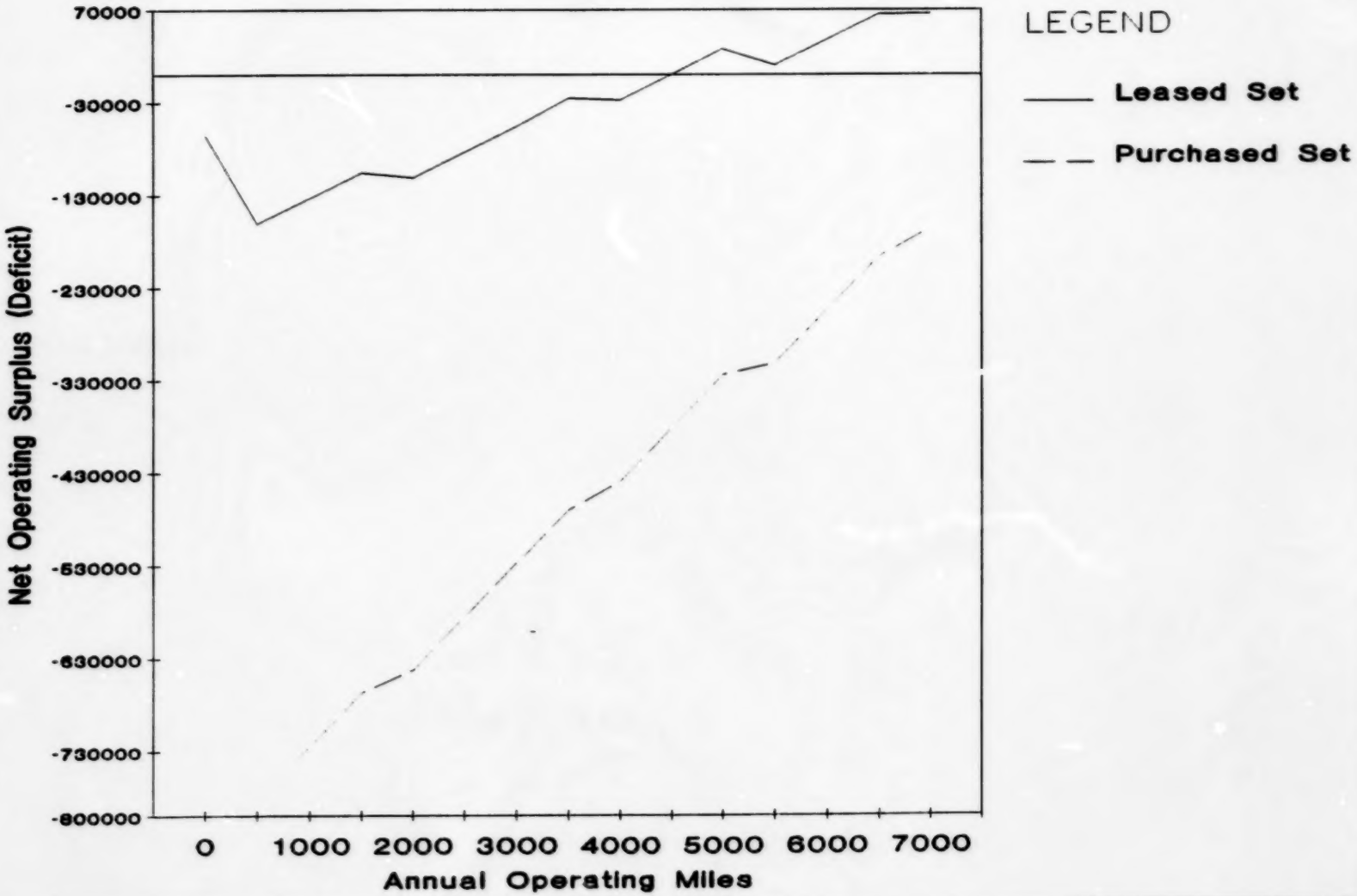
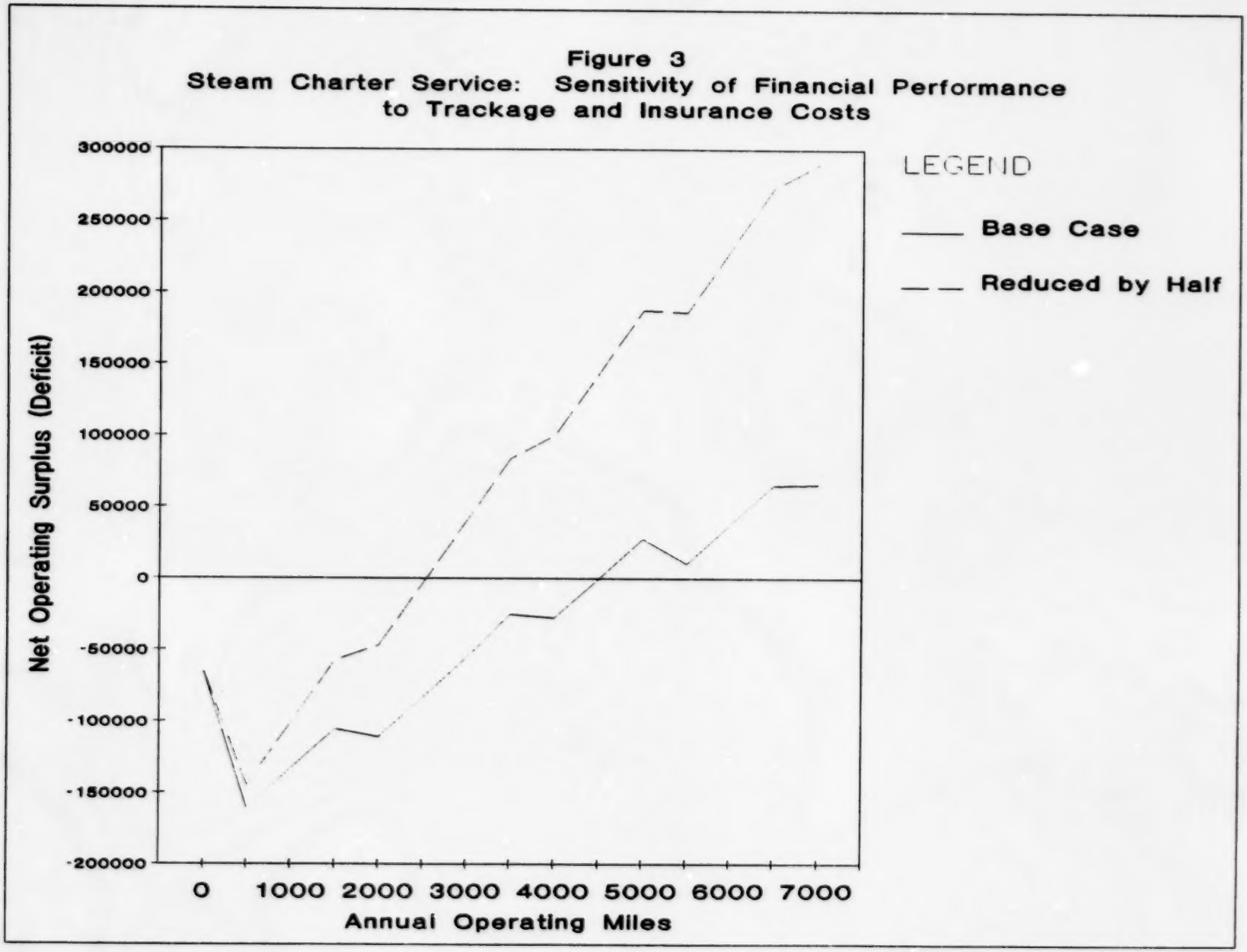


Figure 3
Steam Charter Service: Sensitivity of Financial Performance to Trackage and Insurance Costs



Three factors will reduce the risks of financial failure:

- **First**, initial capital outlays must be kept at a relatively low level, utilizing leased passenger equipment on a short-term, as-required basis and relying on existing maintenance facilities and services wherever possible. Engine 6060 itself is in good operating condition and requires minimal additional outlays for repairs. It is assumed that the engine will be made available to a charter operator on favourable leased terms. With initial capital requirements kept to modest levels, the financial exposure and potential capital losses that will be incurred if the charter service proves to be non-viable will be limited.

- **Second**, the number and type of charter offerings that are made available to the public can be geared to market demand. The market can be tested on a limited basis initially and services expanded and modified over time, as market response, pricing thresholds, and market preferences become more evident. This contrasts with the delivery of regularly scheduled services, which imply major commitments of labor and equipment, continuing market support, and the need to maintain high load factors.

- **Third**, have the steam charter service operated by an existing railway or passenger train organization in order to realize the financial and operational benefits that would accrue from shared services and facilities.

The greatest risks or uncertainties faced by a prospective steam charter service pertain to: 1) the operational constraints presented by the national railways; and 2) the limited prospects for satisfactory financial returns combined with considerable "down-side" financial risk.

It is clear that any potential steam train operator faces very tenuous and uncertain investment conditions. More specifically, it is unclear whether the steam service will be permitted to operate on the national rail lines and, if and where permitted, under what terms, conditions, and costs. CP has forthrightly indicated that it will not entertain the operation of steam trains on its system and CN has suggested acceptance only in respect of its branch lines. It can be argued that if a steam operation achieves a successful

operating and organizational credibility over time, the railways may respond in a positive way to specific charter proposals placed before them. However, that longer term potential cannot be assured nor can the possible terms and conditions be ascertained. This presents a major difficulty to prospective operators, because it is problematic to prepare long-term development plans and to justify "front-end" capital and organizational commitments while the potential scope of activity remains so unclear.

The financial viability of a steam train operation is dependent on 1) achieving high utilization of numerous short and long-haul charters that 2) cater to an up-scale tourist market that is 3) prepared to pay a high price for the experience. The operation of several excursions is required each year in order to spread the high fixed costs over a greater number of passengers. The financial analyses that have been carried out suggest that under favourable conditions, limited profitability can be achieved but that the operation and financial risks and uncertainties are such that there is considerable "down-side" financial potential. The weight of probability is that it will be difficult to operate the business profitably. Investors would need to proceed very cautiously, minimizing investment. The opportunity is most likely to appeal to an existing organization such as CWR that can enter the business with lower marginal costs and risks.

4.9 TOURISM AND ECONOMIC IMPACT

The development of a successful steam charter service could convey the following tourism benefits to Alberta:

- offer an additional attraction to visitors, an especially important factor during the "shoulder" spring and fall seasons;
- attract a new market of out-of-province tourists interested in rail and steam train travel; and,
- encourage tourists drawn primarily by other factors to increase their length of stay in the province in order to take advantage of the steam excursion service.

The greatest potential tourism impact of a steam charter would occur at such time as the operation could: 1) utilize scenic mountain routes readily accessible to the province's major tourism areas; and 2) offer a well-marketed, high-quality travel experience at a premium price. Under realistic

assumptions of pricing and trip offerings, a steam charter service could potentially generate an estimated $0.5 to $1.0 million in new out-of-province tourism revenues for Alberta.

In the short- to medium-term, a steam train service is likely to be confined to low-density branch lines located away from existing tourism centres and in non-mountain areas. The excursions offered will be of generally short duration and probably will appeal to a more localized or regional market. During this period, the net tourism impact to the province can be expected to be relatively low, although the project may generate important local tourism and related economic impacts. As with the existing CWR passenger excursion service, the major tourism benefits during this period of development would be in the nature of providing a new attraction in areas with limited tourism generation at present and contributing to the greater geographic diversification of the province's tourism sector.

4.10 GENERAL CONCLUSIONS

The main findings of the feasibility assessment are summarized in this section of the report.

Marketing Opportunity

There is a market for an Alberta-based steam train service. The preferred target market comprises the general out-of-province visitor who can be attracted by the scenery offered, the rail experience, the en route services and amenities offered, destination attractions, and the steam locomotive itself. Engine 6060 is likely to form only one component of the general appeal of the excursion and, for many passengers, may be of secondary importance. In addition to this more general tourism market, the service will appeal to steam enthusiasts who will be drawn specifically by 6060 and the ancillary vintage equipment that may be used.

The target market is fairly price-insensitive but demands a high level of convenience, reliability, amenities and service.

Operational Considerations

Prospective steam charter operators face considerable difficulties and uncertainties in finding suitable rail lines upon which to operate and predetermining the terms, conditions, and costs that will apply to the use of those railroads. These uncertainties preclude satisfactory long-term planning and are likely to rule out any interest in pursuing the development of a steam charter service by most potential investors.

In the initial years of operation, a steam passenger service is likely to be confined to branch lines, many of which do not offer particular scenic appeal, visitor attractions, or proximity to tourism centres. During this period, the charter operation will need to rely fairly heavily on regional as opposed to out-of-province tourists, and the realizable ticket prices will need to be consistent with those of other family-based activity alternatives and similar excursion services elsewhere.

Over time, it can be hoped that through a demonstrated reliability and operating credibility, the charter service will be permitted to operate more widely, on busier rail lines, and on routings where out-of-province tourists can be attracted more readily.

Equipment Requirements

A steam charter service will have difficulty securing a passenger set at reasonable cost. On the one hand, the outright acquisition of passenger cars represents a significant investment which is difficult to recover from a modest number of charter excursions each year. On the other hand, the availability of equipment on a leased basis is limited and can seriously constrain operational scheduling and the ability to develop charter excursions.

In time, the availability of equipment for short-term lease may improve if VIA's operations are downsized to the point where that organization has surplus equipment, or if a private cruise train system is developed in western Canada. These possibilities are speculative at this time. Another opportunity is to utilize the passenger equipment of the Central Western Railway, although the number and quality of cars owned by that organization may be inadequate for the proposed charter service.

Realistically, the charter excursions that might be offered by a new steam rail organization are likely to be confined to a maximum of two or three days. For longer haul cruises, and keeping in mind the upscale market for the excursions, modern passenger equipment would normally be preferred. However, for services of the duration envisaged as well as the compatibility of older cars with the use of a steam engine, it is not considered to be necessary that the passenger set comprise modern equipment, with air conditioning and other amenities. However, the use of older equipment does confine the charter service to the late spring to early fall operating season. As well, the equipment used must be acceptable to the operating railroads, CN and CP, and if older equipment is employed it must be in good condition.

Organization

The preferred type of organization that would operate the steam charter service would be a for-profit, commercially-oriented firm having a commitment toward the long-term development of a viable tourism operation. The study team has identified a number of operating and financial advantages that would accrue from developing the steam charter as an adjunct to or in association with an existing railway organization or cruise train or railway excursion service. In the longer term, the development of a new cruise train service in western Canada which might replace or supplement the VIA system would represent one such organizational opportunity. The CWR, which already operates a modest steam excursion service on its own captive rail line in east central Alberta, and has indicated a desire to expand the service elsewhere in the province, offers another possibility and perhaps the most promising alternative at the present time.

Profitability

The financial analyses carried out indicate that a proposed steam charter operation is commercially non-viable under most realistic scenarios, and certainly during the initial years of development. The level of profit that may be achieved under certain sets of favourable conditions is unlikely to be sufficiently high to compensate for the risks and operational commitment involved.

In the longer term, and at such time as a charter operation may be able to gain access to rail lines in scenic and popular tourist areas, a modest level of profitability is possible if the services are marketed and priced as a high-quality experience primarily to out-of-province tourists.

The development of the steam train service by an existing rail-related organization offers some financial economies as compared to its operation as an independent venture. However, even under these circumstances, where some services and equipment can be secured on a marginal costing basis, the expected profitability remains at unsatisfactory levels.

Risk

A steam charter service utilizing Engine 6060 is considered to represent a high-risk venture offering unsatisfactory profit potential with considerable down-side risk. Uncertainties regarding the future ability to operate over federal railways minimizes the opportunity on the part of a prospective

charter organization to prepare longer-term business plans and goals with any confidence that these can be achieved.

Economic and Tourism Impact

The introduction of a steam charter service will provide a new tourist attraction in Alberta. It will attract new visitors, particularly steam excursionists and railfans who would not otherwise visit the province, and encourage other visitors to extend their length of stay. The direct net benefit to the province from increased tourism spending could amount to $0.5 million to $1.0 million annually after three to five years of operation, and perhaps by $0.25 million per year in the initial years.

The project will assist in diversifying the geographic distribution of tourism activity in the province and will have a particular impact on those communities used as staging points and destinations for the excursions.

Recognizing the potential economic benefits that might accrue to the province from the service, as well as the fact that the continued maintenance of Engine 6060 in an operational condition might cost in the order of $65,000 per year in any case, it may from a public policy standpoint be justifiable to provide some financial support to the charter operator to reduce the financial risk involved in developing the service.

Recommendation

It is recommended that the Government of Alberta make known to potential excursion operators the availability under lease of Engine 6060 for use in Alberta-oriented steam charter services. Prospective lessees should submit business plans documenting proposed schedules, routes, insurance arrangements, and marketing and operational programs. It is important that the current operating condition of the engine be preserved and operators must be able to demonstrate that they have the technical resources and know-how, facilities, and equipment to properly maintain the locomotive. Operator maintenance programs should be closely monitored and subject to inspection, and the financial terms of any leases should include provision to cover periodic repair and replacement costs.

APPENDIX 1

Detailed Supporting Tables to Financial Analysis

FINANCIAL ANALYSIS OF A STEAM EXCURSION OPERATION USING ENGINE 6060
BASE CASE SCENARIO - SHORT TERM

ANNUAL OPERATING MILES	0	500	1000	1500	2000	2500	3000	3500
MAINTENANCE COSTS	(1)							
Maintenance personel								
Hours/year	900	1800	1800	1800	2700	2700	2700	2700
Wage Rate (2)	$30	$30	$30	$30	$30	$30	$30	$30
Chief Mechanical Officer								
Hours/year	150	300	300	300	450	450	450	450
Wage Rate (3)	$40	$40	$40	$40	$40	$40	$40	$40
Boiler Maintenance								
Annual Cost (4)	$0	$13,333	$13,333	$13,333	$13,333	$13,333	$13,333	$13,333
Inspection cost @ 15%	$0	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000
Running gear maintenance								
Life span in miles	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Annual Cost (5)	$0	$50	$100	$150	$200	$250	$300	$350
Inspection cost @ 15%	$0	$8	$15	$23	$30	$38	$45	$53
Light repairs	$20,000	$22,000	$24,000	$26,000	$28,000	$30,000	$32,000	$34,000
Facility costs	$12,000	$12,000	$12,000	$12,000	$12,000	$12,000	$12,000	$12,000
Total Maintenance Costs	$65,000	$115,391	$117,448	$119,506	$154,563	$156,621	$158,678	$160,736
OPERATING COSTS								
Water								
Gallons per mile	100	100	100	100	100	100	100	100
Annual cost (6)	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500
Fuel								
Gallons per mile	10	10	10	10	10	10	10	10
Annual cost (7)	$0	$2,600	$5,200	$7,800	$10,400	$13,000	$15,600	$18,200
Insurance								
Cost per mile	$31	$31	$31	$31	$31	$31	$31	$31
Annual cost	$0	$15,500	$31,000	$46,500	$62,000	$77,500	$93,000	$108,500
Trackage								
Cost per mile	$35	$35	$35	$35	$35	$35	$35	$35
Annual cost	$0	$17,500	$35,000	$52,500	$70,000	$87,500	$105,000	$122,500
Maintenance personnel expenses (8)	$0	$750	$1,500	$2,250	$3,000	$3,750	$4,500	$5,250
Backup locomotive power								
Cost per mile (9)	$11	$11	$11	$11	$11	$11	$11	$11
Annual cost	$0	$5,500	$11,000	$16,500	$22,000	$27,500	$33,000	$38,500
Administration/marketing								
Personnel cost	$0	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000
Direct marketing costs	$0	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000
Annual cost	$0	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000
Total annual operating costs (10) (excluding rolling stock)	$0	$117,350	$159,700	$202,050	$244,400	$286,750	$329,100	$371,450
Total annual O+M Costs	$65,000	$232,741	$277,148	$321,556	$398,963	$443,371	$487,778	$532,186

FINANCIAL ANALYSIS OF A STEAM EXCURSION OPERATION USING ENGINE 6060
BASE CASE SCENARIOS - SHORT TERM (CONTINUED)

ANNUAL OPERATING MILES	0	500	1000	1500	2000	2500	3000	3500
ROLLING STOCK	(1)							
Lease option (11)	$0	$30,000	$60,000	$90,000	$120,000	$150,000	$180,000	$210,000
REVENUE								
Revenue (12)	$0	$48,000	$96,000	$144,000	$192,000	$240,000	$288,000	$336,000
SURPLUS (DEFICIT)	($65,000)	($214,741)	($241,148)	($267,556)	($326,963)	($353,371)	($379,778)	($406,186)

Notes:

1. Maintenance cost associated with keeping the engine in running condition.
2. Priced at cost, including fringe benefits.
3. Priced at consulting rate of $300/day. Involvement of CANAC personnel will increase this cost substantially.
4. Assumes total repair costs of $200,000, and an estimated lifespan of 15 years assuming annual operating miles not in excess of 15,000.
5. Assumes total repair costs of $200,000; there are an estimated 400,000 miles left on the tires.
6. Assumes $0.01 per gallon.
7. Assumes $0.52 per gallon.
8. Assumes an average of $300 in maintenance personnel related expenses per excursion.
9. Assumes 2 leased locomotives @ $1100/day. Assumed average move/day: 200 miles.
10. Assumes no imputed lease value for the engine 6060.
11. Assumes 10 car set with 400 passenger capacity @ $12,000/day. Assumed average miles/day: 200.
12. Assumes an 80% occupancy rate and $0.30 revenue per seat-mile.

FINANCIAL ANALYSIS OF A STEAM EXCURSION OPERATION USING ENGINE 6060
BASE CASE SCENARIO - LONG TERM

ANNUAL OPERATING MILES	0	500	1000	1500	2000	2500	3000	3500
MAINTENANCE COSTS	(1)							
Maintenance personel								
Hours/year	900	1800	1800	1800	2700	2700	2700	2700
Wage Rate (2)	$30	$30	$30	$30	$30	$30	$30	$30
Chief Mechanical Officer								
Hours/year	150	300	300	300	450	450	450	450
Wage Rate (3)	$40	$40	$40	$40	$40	$40	$40	$40
Boiler Maintenance								
Annual Cost (4)	$0	$13,333	$13,333	$13,333	$13,333	$13,333	$13,333	$13,333
Inspection cost @ 15%	$0	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000	$2,000
Running gear maintenance								
Life span in miles	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Annual Cost (5)	$0	$50	$100	$150	$200	$250	$300	$350
Inspection cost @ 15%	$0	$8	$15	$23	$30	$38	$45	$53
Light repairs	$20,000	$22,000	$24,000	$26,000	$28,000	$30,000	$32,000	$34,000
Facility costs	$12,000	$12,000	$12,000	$12,000	$12,000	$12,000	$12,000	$12,000
Total Maintenance Costs	$65,000	$115,391	$117,448	$119,506	$154,563	$156,621	$158,678	$160,736
OPERATING COSTS								
Water								
Gallons per mile	100	100	100	100	100	100	100	100
Annual cost (6)	$0	$500	$1,000	$1,500	$2,000	$2,500	$3,000	$3,500
Fuel								
Gallons per mile	10	10	10	10	10	10	10	10
Annual cost (7)	$0	$2,600	$5,200	$7,800	$10,400	$13,000	$15,600	$18,200
Insurance								
Cost per mile	$31	$31	$31	$31	$31	$31	$31	$31
Annual cost	$0	$15,500	$31,000	$46,500	$62,000	$77,500	$93,000	$108,500
Trackage								
Cost per mile	$35	$35	$35	$35	$35	$35	$35	$35
Annual cost	$0	$17,500	$35,000	$52,500	$70,000	$87,500	$105,000	$122,500
Maintenance personnel expenses (8)	$0	$750	$1,500	$2,250	$3,000	$3,750	$4,500	$5,250
Backup locomotive power								
Cost per mile (9)	$11	$11	$11	$11	$11	$11	$11	$11
Annual cost	$0	$5,500	$11,000	$16,500	$22,000	$27,500	$33,000	$38,500
Administration/marketing								
Personnel cost	$0	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000
Direct marketing costs	$0	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000
Annual cost	$0	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000
Total annual operating costs (10) (excluding rolling stock)	$0	$117,350	$159,700	$202,050	$244,400	$286,750	$329,100	$371,450
Total annual O+M Costs	$65,000	$232,741	$277,148	$321,556	$398,963	$443,371	$487,778	$532,186

FINANCIAL ANALYSIS OF A STEAM EXCURSION OPERATION USING ENGINE 6060
BASE CASE SCENARIOS - LONG TERM (CONTINUED)

ANNUAL OPERATING MILES	0	500	1000	1500	2000	2500	3000	3500
ROLLING STOCK	(1)							
Lease option (11)	$0	$30,000	$60,000	$90,000	$120,000	$150,000	$180,000	$210,000
REVENUE								
Revenue (12)	$0	$102,000	$204,000	$306,000	$408,000	$510,000	$612,000	$714,000
SURPLUS (DEFICIT)	($65,000)	($160,741)	($133,148)	($105,556)	($110,963)	($83,371)	($55,778)	($28,186)

Notes:
1. Maintenance cost associated with keeping the engine in running condition.
2. Priced at cost, including fringe benefits.
3. Priced at consulting rate of $300/day. Involvement of CANAC personnel will increase this cost substantially.
4. Assumes total repair costs of $200,000, and an estimated lifespan of 15 years assuming annual operating miles not in excess of 15,000.
5. Assumes total repair costs of $200,000; there are an estimated 400,000 miles left on the tires.
6. Assumes $0.01 per gallon.
7. Assumes $0.52 per gallon.
8. Assumes an average of $300 in maintenance personnel related expenses per excursion.
9. Assumes 2 leased locomotives @ $1100/day. Assumed average move/day: 200 miles.
10. Assumes no imputed lease value for the engine 6060.
11. Assumes 10 car set with 400 passenger capacity @ $12,000/day. Assumed average miles/day: 200.
12. Assumes an 85% occupancy rate and $0.60 revenue per seat-mile.

APPENDIX 2

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APPENDIX 3

List of Contacts

LIST OF CONTACTS

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